

USE OF MEDICAL CANNABIS FOR NEUROLOGIC DISORDERS

BACKGROUND

The American Academy of Neurology (AAN) is a professional organization of over 36,000 practicing neurologists and neuroscientists with a deep and abiding interest in assuring the best possible care of patients with all types of neurologic disorders.

Legislation has been passed in 33 states and the District of Columbia for the use of cannabis for medical purposes, which protects users from criminal penalties, allows access to a variety of products and strains, and enables smoking or vaporizing of products. Separately, 13 states allow for the use of medical cannabidiol (CBD) products or tetrahydrocannabinol (THC) products for medical purposes in limited situations.¹ Most of these state laws include specific provisions for individuals living with neurologic conditions like intractable (treatment resistant) epilepsy, multiple sclerosis, ALS, and Parkinson's disease. As these policies are adopted and expanded, it is vitally important for the AAN to have an official position on the issue that can inform and assist policymakers and practitioners.

DESCRIPTION OF THE ISSUE

In this position statement updated from 2014 and 2018, the AAN recommends not using the phrase "medical marijuana" but rather the use of "cannabis for medical purposes" for clarity and to specifically delineate that not all phytocannabinoids may be useful in neurologic conditions.

Existing limited medical research does not support the present and proposed legislative policies across the country that promote cannabis-based products as treatment options for the majority of neurologic disorders.² Most studies are small and inadequately designed. There are concerns regarding the composition of cannabis purportedly for medical use as well as the consistency of quality control and assurance measures used in production. There are also concerns regarding the safety of using cannabis in medical settings, especially for pediatric patients³ and people with disorders of the nervous system who use cannabis to treat neurologic diseases.⁴ Psychiatric and neurocognitive adverse effects have been described in studies of recreational and medical use,⁵ which may be particularly problematic in a population with compromised neurologic function. The interaction of these compounds with prescription medications is uncertain and may introduce unnecessary and unknown risk for patients living with chronic, complex neurologic diseases that require one or more prescription drugs.⁶ In addition, inconsistency and inaccurate labeling exists for the products that are outside the purview of the Food & Drug Administration (FDA).

Studies do support the use of the FDA-approved plant-based pharmaceutical grade cannabidiol (CBD) product that can be legally prescribed in all 50 states without need for a special Drug Enforcement Agency (DEA) license to treat seizures associated with Lennox-Gastaut syndrome (LGS)⁷ and Dravet syndrome⁸ for patients two years and older, and tuberous sclerosis complex (TSC) for patients one year and older.

More quality and thorough research in other areas outside of epilepsy is urgently needed to determine the safety and potential medical benefit of various forms of cannabis for neurologic disorders, especially those for which anecdotal evidence is available but where strong scientific data is lacking. Anecdotal evidence may engender public support for the use of cannabis to treat neurologic diseases, but such information must be supported and substantiated by rigorous research, which can then inform government policy.

THE AAN POSITION

The AAN supports all efforts to allow for rigorous research to evaluate the long-term safety and efficacy of cannabis and compounds derived from the plant. This includes proposals that increase access for the study of cannabis under IRB-approved research protocols and the reclassification of cannabis used for medical purposes from its current Schedule I status to Schedule II to allow for medical research. The AAN does not have a position on the legalization and regulation of public sale of cannabis products, any more than it has a position on the legalization and regulation of public sale of alcohol products. The AAN recognizes that the endocannabinoid system offers potentially highly valuable drug targets, and that cannabis may thereby contain agents with important future therapeutic applications for neurologic disorders.

Currently, the AAN does not support the use of, nor any assertion of therapeutic benefits of, cannabis products as medicines for neurologic disorders in the absence of sufficient scientific peer-reviewed research to determine their safety and specific efficacy. The FDA-approved plant-based CBD product is an example that has now proven to be sufficiently safe and effective for the treatment of seizures for certain epilepsy patients. Safety is of critical importance when cannabis is used in patients with underlying neurologic disorders, or in children whose developing brains may be more vulnerable to its potentially toxic effects from certain compounds found in the plant, such as THC.²

The AAN acknowledges interest in the use of cannabis from patients and physicians and notes that several states have moved to legalize cannabis for both medical and recreational uses. The AAN also recognizes that cannabis may be useful in treating neurologic disorders. However, in most cases, the evidence is lacking to draw conclusions regarding the effectiveness of cannabis for other neurologic conditions. With a growing number of neurologic patients using cannabis, the AAN also acknowledges additional cannabis policy issues that require more research, including criminalization, which disproportionately penalizes people of color.⁹

The AAN recommends that each product and formulation of cannabis used in treating medical conditions demonstrate safety and efficacy via scientific study similar to the process required by the FDA for the approval of any drug. Many cannabis preparations that had some evidence for efficacy in studies are not available in the United States, and the studies were conducted in Europe using standardized preparations.¹⁰ It is not appropriate to extrapolate the results of trials of standardized preparations to other non-standardized, non-regulated medical cannabis products which may be commercially available in states with laws supporting the use of medical cannabis. Efficacy of a non-standardized product is not equal to that of standardized products that are studied in clinical trials. Additionally, most currently available medical cannabis products are not regulated by any agency and may not contain the ingredients identified by labeling, making quality control impossible and raising further safety questions.^{11, 12}

RATIONALE

The federal government currently classifies marijuana as a Schedule I drug, defined as having no currently acceptable medical use and a high potential for abuse. Efforts to conduct rigorous medical research and/or reclassify marijuana in the DEA schedule will increase the potential for additional scientific data to inform clinicians and medical professionals.

The history and basic science of medical cannabis in treating neurologic disorders dates to the 1800s. Marijuana is derived from the plant *Cannabis sativa* and *indica*, which contains over 60 different pharmacologically active compounds referred to as cannabinoids.¹³ THC is the major psychoactive compound which causes the euphoric

effect. Other cannabinoid compounds such as cannabidiol and CBD are not known to have psychoactive properties. The psychoactive effects of THC can acutely alter a patient's cognition and inhibit normal functioning. Long-term effects on learning and memory may occur.¹⁴ Thus, from a safety perspective, medical use of products with high THC content is controversial. Research is necessary to develop cannabis-based compounds that have minimal psychoactive properties while retaining any therapeutic pharmacologic effects. Just as it is important to know the potential therapeutic benefit of these compounds, we also need to know the side effects that can occur. Many medications have shown potential benefits in Phase I and II studies, only to fail in Phase III trials because of side effect profiles.

POSITION STATEMENT HISTORY

Originally drafted in 2014, updated in 2018, updated in 2020 by Dominic Fee, MD, FAAN; Dan Freedman, DO; Anup D. Patel, MD, FAAN, FAES; Korak Sarkar, MD; Sarah Song, MD, MPH, FAAN

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